

BIOTOXIN QUARTERLY REPORT

April-June 2000



BIOTOXIN SUMMARY

PSP Toxins Increase

The enclosed reports (No. 00-12 through 00-17) provide a summary of biotoxin activity and toxigenic phytoplankton distribution for the months of April through June, 2000.

PSP toxins were detected at one site in Los Angeles County in April. During May we again detected a low level of PSP toxins in mussels from Los Angeles County. These observations were of interest and concern as PSP toxicity along the Los Angeles coast is an infrequent occurrence.

More predictable patterns of PSP toxicity were observed in June. Initially low levels of toxicity were detected along the Marin coast in the Drakes Bay region, as well as along the coast of San Mateo and Santa Cruz counties. By the end of June the levels of toxins at some sites in Marin had increased above the alert level. Low concentrations of PSP toxins were also detected in Santa Barbara in June.



QUARANTINES

The annual quarantine on sport-harvested mussels occurs each year from May 1 through midnight on October 31. This quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. This particular species is known to concentrate and retain the PSP toxins for a long period of time. By discarding the dark part of the siphon and the viscera the consumer can reduce the risk of ingesting these toxins.

Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera), which are more likely to

contain toxins than the white tissue. We also advise that persons engaged in the sport-harvesting of any bivalve shellfish should contact our "Shellfish Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity.

VOLUNTEER FOCUS

With each report we include a tables of information that list the program participants that have collected shellfish and phytoplankton samples each month. Please take a few moments to read through the names and agencies that have helped, for they truly are the program.

Monitoring for biotoxins and toxin-producing phytoplankton along the entire California coast is certainly not an easy task. In fact, it is quite overwhelming given the unpredictable nature of these events and the incredible expanse of California's coastline. Without the consistent effort contributed by the folks listed in this report we would be much further behind in our efforts understand these events. Each sample that you submit helps us immediately in our goal to protect the public's health, but it also helps us build a long-term understanding of the causal relationships between oceanographic conditions, phytoplankton distribution and abundance, and the occurrence of toxins in shellfish and other marine life.

A special thanks to all those that help!

(Continued on page 2)

How to Contact Us:

The Biotoxin Monthly Report is prepared and distributed by the California Department of Health Services' Marine Biotoxin Monitoring and Control Program.

For information on our program please call (510) 540-3423, fax us at (510) 540-2716, or send me an email at glangloi@ix.netcom.com.

Call our toll-free number for recorded information on shellfish quarantines related to marine biotoxins: (800) 553-4133.

VOLUNTEER FOCUS (continued)

From time to time we hope to highlight some of the many people that help us and the public with their efforts. The following article, written by staff member Candi Zizek, focuses on one of our intrepid samplers along the far north coast of California.

Del Norte County

There's a picturesque fellow often seen traveling in Northern California's Crescent City on his bicycle, sporting his ever-present suspenders. If you see him, say hello to Dale Watson, a very important component of California's Biotoxin Monitoring Program.

Since 1991, Dale's been pulling phytoplankton or mussel samples for our program. He started collecting samples while working as a Registered Environmental Health Specialist for the Environmental Health Department in Del Norte County. Since retiring, he's continued collecting as a DHS Volunteer. Dale finds mussel sampling enjoyable once in a while and feels nobody else on the Del Norte EH staff likes to get outdoors quite as much as he does.

Dale braves the cold and rough surf of the northern California coast to collect mussels at Point St. George. His efforts provide our program with the only information on biotoxin levels between Trinidad Head in Humboldt County and southern Oregon.

Dale Watson completed his Public Health degree at UC Berkeley in 1950, and began his career shortly thereafter

ment.

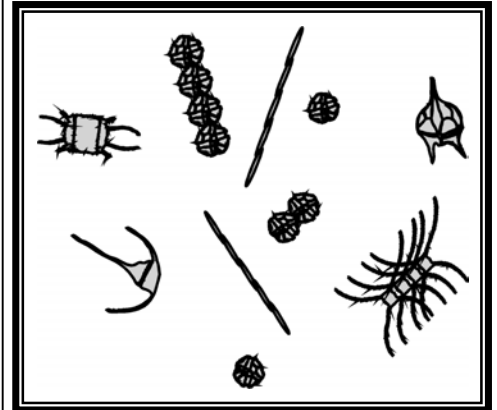
Dale retired again in June 1997 and still keeps busy outdoors by finding things to do for EH. In addition to the mussel sampling, Dale maintains the air quality sampling and does a little rabies work for Del Norte County.

Dale has a system that works well to keep his mussel samples arriving COLD. The EH staff puts the shipping box directly into the freezer for when he arrives with his mussels. Once shucked, the bottle of drained mussels returns to the freezer to be shipped as a total frozen unit, blue ice & mussels.

Dale has been married to Mary Jean for thirty-three years, and between them both, they have nine children. He really is retired now, although he still keeps busy for Del Norte. If you see him around Crescent City, wave hello, and please tell him thanks for a job well done for Del Norte, California and for Public Health! We thank you, Dale!



VOLUNTEER



EPA Publication Focuses on Volunteer Plankton Monitoring

The 1991 domoic acid episode changed our perspective on biotoxins along the west coast of the U.S. and it ultimately changed the structure of our monitoring program. With the guidance and support of the U.S. Food and Drug Administration's Office of Seafood in Washington D.C., California set out several years ago to develop a volunteer-based program for monitoring phytoplankton along the California coast.

The success of our program has paved the way for similar programs in Maine, Massachusetts, Connecticut, and Rhode Island, all of which rely on some level of volunteer effort. The Volunteer Monitor, a publication of the Environmental Protection Agency, highlighted these efforts in a recent article. You can find this and other interesting information on volunteer-based programs at:

www.epa.gov/owow/volunteer

Table 1. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during April 2000.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	4
	Humboldt County Environmental Health Department	2
Mendocino	CDHS Volunteer (Amy Johnson)	1
Sonoma	None Submitted	
Marin	Cove Mussel Company	3
	CDHS Environmental Management Branch	3
	Hog Island Oyster Company	4
	Johnson Oyster Company	16
	Marin Oyster Company	4
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	4
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	3
Orange	Orange County Health Care Agency	1
	Ecomar, Inc.	2
San Diego	Carlsbad Aquafarms, Inc.	4
	DHS Volunteer (Paul Sims)	2

Table 2. Agencies and organizations participating in marine phytoplankton sample collection in California during April 2000.

COUNTY	AGENCY	SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	4
	Arcata High School	4
Mendocino	CDHS Volunteer (John Richardson, Amy Johnson, Sarah Wheaton)	4
Sonoma	CDHS Volunteer (Cathleen Cannon)	1
Marin	CDHS Volunteer (Brent Anderson)	4
	CDHS Environmental Management Branch	1
	Johnson Oyster Company	16
Alameda	City of Berkeley	1
San Francisco	CDHS Volunteer (Eugenia McNaughton)	4
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	Santa Cruz County Environmental Health Department	4
	Aptos High School	1
	San Lorenzo Valley High School	1
Monterey	CDHS Volunteer (Lisa Marrack)	2
San Luis Obispo	Morro Bay 4H	1
	Tenera Environmental	4
Santa Barbara	California Department of Parks and Recreation	2
	Vandenberg Air Force Base, Environmental Health Services	1
	U.C. Santa Barbara Marine Sciences	4
Ventura	California Department of Parks and Recreation	2
Los Angeles	Los Angeles County Sanitation District	3
	Los Angeles County Health Department	1
Orange	Ecomar, Inc.	2
	Orange County Marine Institute	1
San Diego	CDHS Volunteers (Randy and Bill Dick, Kai Schumann, Jeff Kermode)	9
	San Diego County Environmental Health Department	4

Table 3. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during May 2000.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	5
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	None Submitted	
Marin	Cove Mussel Company	3
	CDHS Environmental Management Branch	3
	Hog Island Oyster Company	2
	Johnson Oyster Company	20
	Marin Oyster Company	3
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	1
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	5
	San Luis Obispo County Environmental Health Department	2
Santa Barbara	U.C. Santa Barbara Marine Science Institute	5
	California Department of Parks and Recreation	1
	Vandenberg Air Force Base, Environmental Health Services	2
Ventura	Ventura County Environmental Health Department	2
Los Angeles	Los Angeles County Health Department	2
Orange	Ecomar, Inc.	4
	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	CDHS Volunteer (Paul Sims)	2

Table 4. Agencies and organizations participating in marine phytoplankton sample collection in California during May 2000.

COUNTY	AGENCY	SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	4
Mendocino	CDHS Volunteer (Amy Johnson, Sarah Wheaton)	4
Sonoma	CDHS Volunteer (Cathleen Cannon)	1
Marin	CDHS Volunteer (Brent Anderson)	1
	California Department of Fish and Game	1
	Johnson Oyster Company	16
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	3
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	Santa Cruz County Environmental Health Department	1
	California Department of Parks and Recreation	1
	Watsonville High School	1
Monterey	None Submitted	
San Luis Obispo	Morro Bay 4-H	1
Santa Barbara	U.C. Santa Barbara Marine Sciences	3
	California Department of Parks and Recreation	1
Ventura	California Department of Parks and Recreation	1
Los Angeles	City of Los Angeles Environmental Monitoring Division	1
	Los Angeles County Sanitation District	1
Orange	Ecomar, Inc	3
	Orange County Marine Institute	2
San Diego	CDHS Volunteers (Randy and Bill Dick, Kai Schumann)	4

Table 5. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during June 2000.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	4
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	CDHS Environmental Management Branch	8
	Hog Island Oyster Company	5
	Johnson Oyster Company	26
	Marin Oyster Company	4
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	3
Santa Cruz	Santa Cruz County Environmental Health Department	3
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	4
	San Luis Obispo County Environmental Health Department	2
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
	California Department of Parks and Recreation	1
	Vandenberg Air Force Base, Environmental Health Services	2
Ventura	California Department of Parks and Recreation	1
Los Angeles	Los Angeles County Health Department	2
Orange	Orange County Health Care Agency	1
	Ecomar, Inc.	4
San Diego	Carlsbad Aquafarms, Inc.	3
	California Department of Parks and Recreation	1

Table 6. Agencies and organizations participating in marine phytoplankton sample collection in California during June 2000.

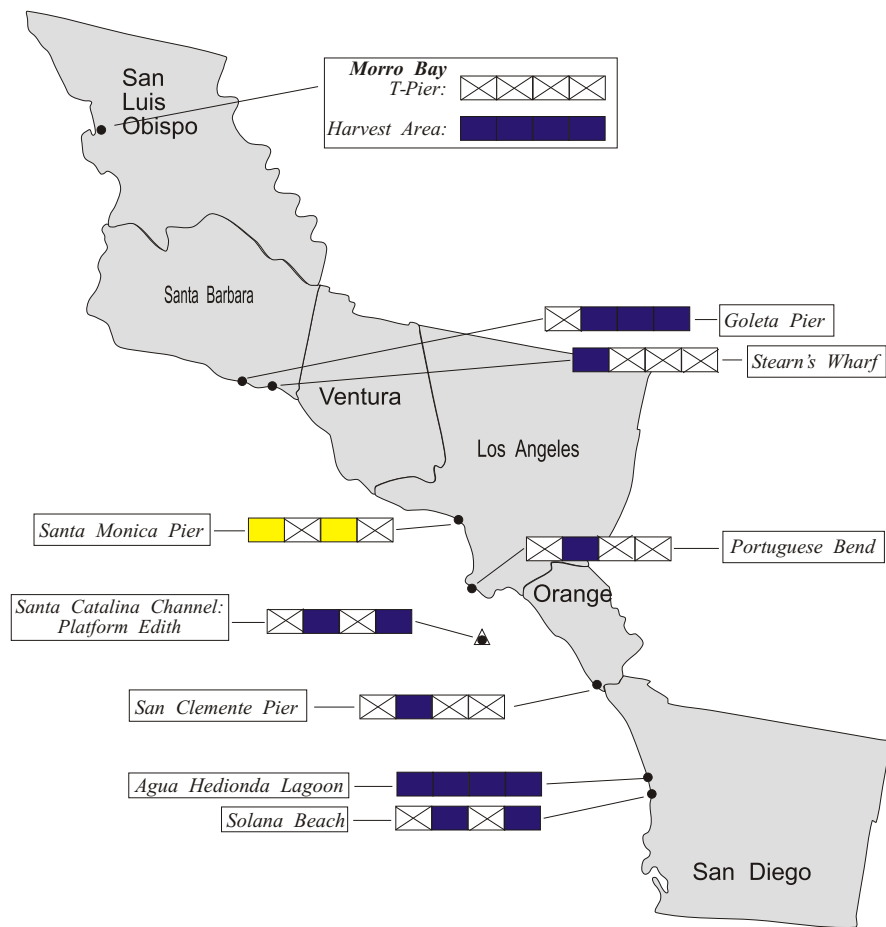
COUNTY	AGENCY	SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	2
Mendocino	CDHS Volunteer (John Richardson, Amy Johnson)	4
Sonoma	None Submitted	
Marin	CDHS Volunteer (Brent Anderson)	1
	CDHS Environmental Management Branch	6
	Johnson Oyster Company	16
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	1
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	Santa Cruz County Environmental Health Department	3
Monterey	None Submitted	
San Luis Obispo	Tenera Environmental	2
Santa Barbara	California Department of Parks and Recreation	1
Ventura	None Submitted	
Los Angeles	Los Angeles County Environmental Health Department	1
	Los Angeles County Sanitation District	1
Orange	Ecomar, Inc.	1
San Diego	CDHS Volunteer (Kai Schumann)	2
	San Diego County Environmental Health Department	2

SHELLFISH BIOTOXIN MONTHLY REPORT

April 2000

Technical Report No. 00-12

Distribution of Shellfish Biotoxins Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

PSP Range: (ug/100 g) no sample not detected < 80¹ ≥ 80

DA Range: (ppm) no sample not detected < 20² ≥ 20

¹PSP Alert Level ²DA Alert Level
● = Single Site ● = Multiple Sites ▲ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, April 2000.

INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

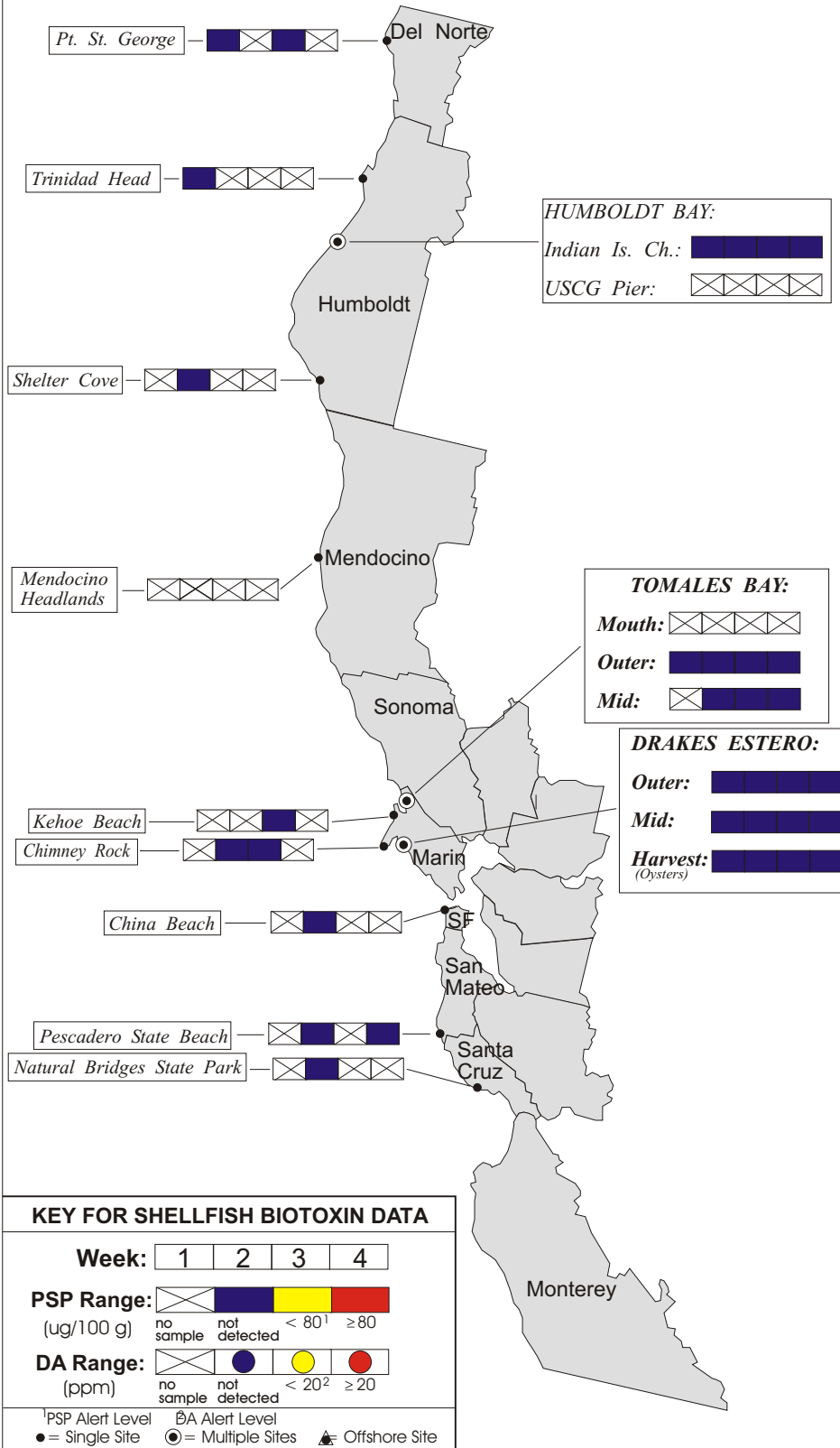
Southern California Summary:

Paralytic Shellfish Poisoning (PSP): PSP toxicity was detected at two southern California sites during April. Low levels of PSP toxins were detected in mussels collected from Santa Monica Pier on April 5 (42 ug) and April 19 (48 ug).

*For Information on our Volunteer
Field Sampling Program Please Call:*

(510) 540-3423

Distribution of Shellfish Biotoxins Northern California



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

PSP toxicity was not detected at any northern California sites during April.

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

*For More Information Please Call:
(510) 540 - 3423*

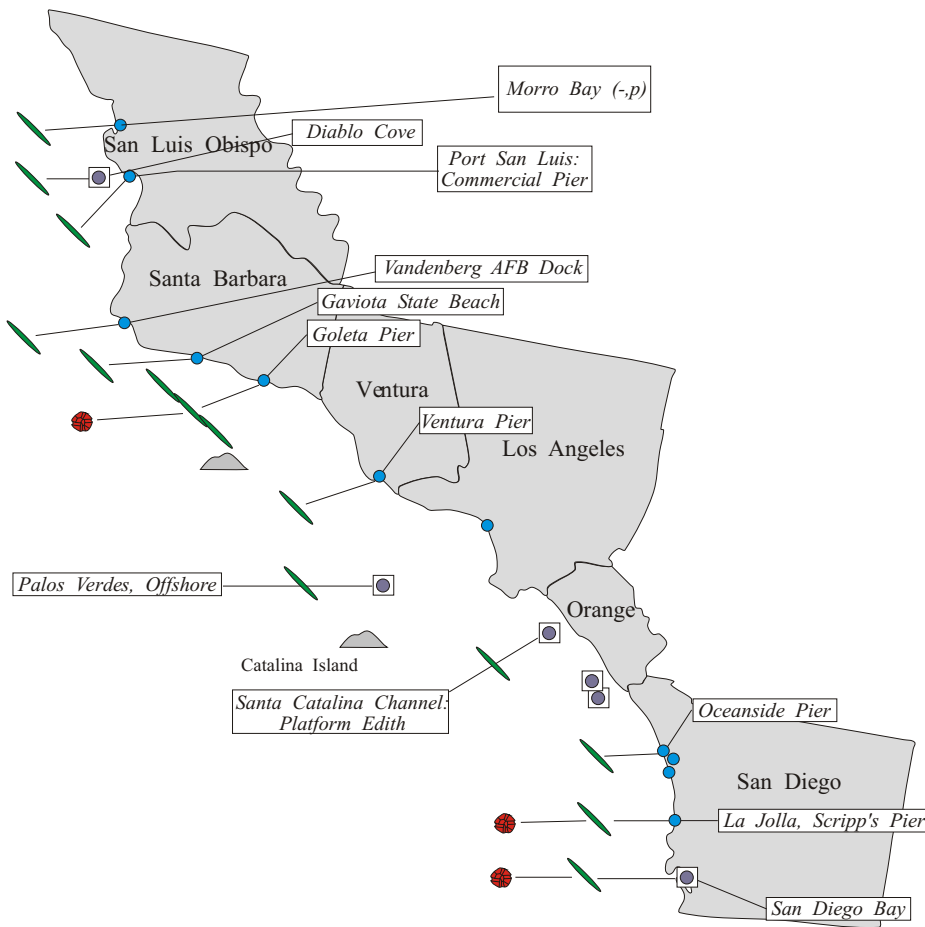
*For Recorded Biotoxin Information Call:
(800) 553 - 4133*

Phytoplankton Monthly Report

April 2000

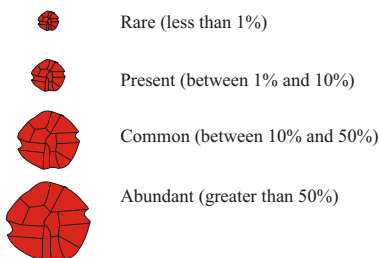
Technical Report No. 00-13

Distribution of Toxin-Producing Phytoplankton Southern California



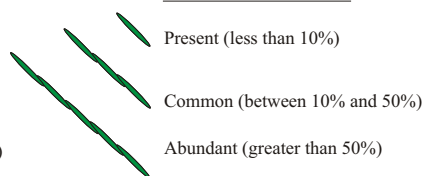
Relative Abundance of Known Toxin Producers

Alexandrium Species



For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Pseudo-nitzschia Species



MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- ⊙ Multiple Sampling Stations
- ⊠ Offshore Sampling Station

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at several southern California sites during April. Low numbers of *Alexandrium* were observed in a sample collected from the Goleta Pier (Santa Barbara County) on April 19. Low numbers of this dinoflagellate were also detected in La Jolla (April 10) and in San Diego Bay (April 22).

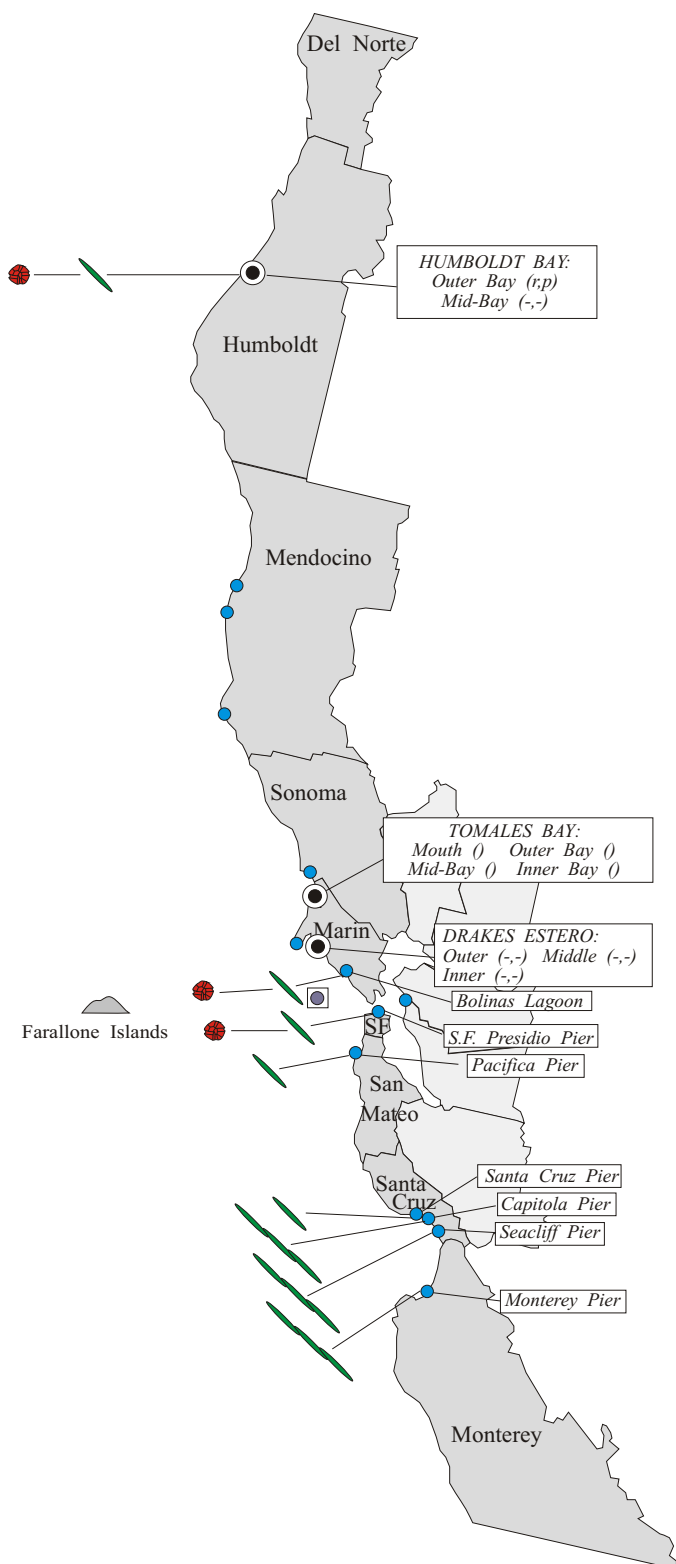
Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed at several sites along the southern California coast during April. The highest observed relative abundances of this diatom were at the Goleta Pier on April 19. Cell densities were low for this site, however.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

For More Information Please Call:
(510) 540 - 3423

For Recorded Biotxin Information Call:
(800) 553 - 4133

Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at very low levels in samples from several sites in Northern California during April. Small numbers of this toxin producer were detected inside Humboldt Bay at the U.S. Coast Guard dock (Humboldt County, April 30), inside Bolinas Lagoon (Marin County, April 25), and at the Presidio Pier inside the Golden Gate (San Francisco, April 29).

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed at several sites in Northern California during April. The highest relative abundances of this diatom were detected in samples from Santa Cruz County at Seacliff Pier (April 6) and Capitola Pier (April 6).

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For More Information Please Call:
(510) 540 - 3423

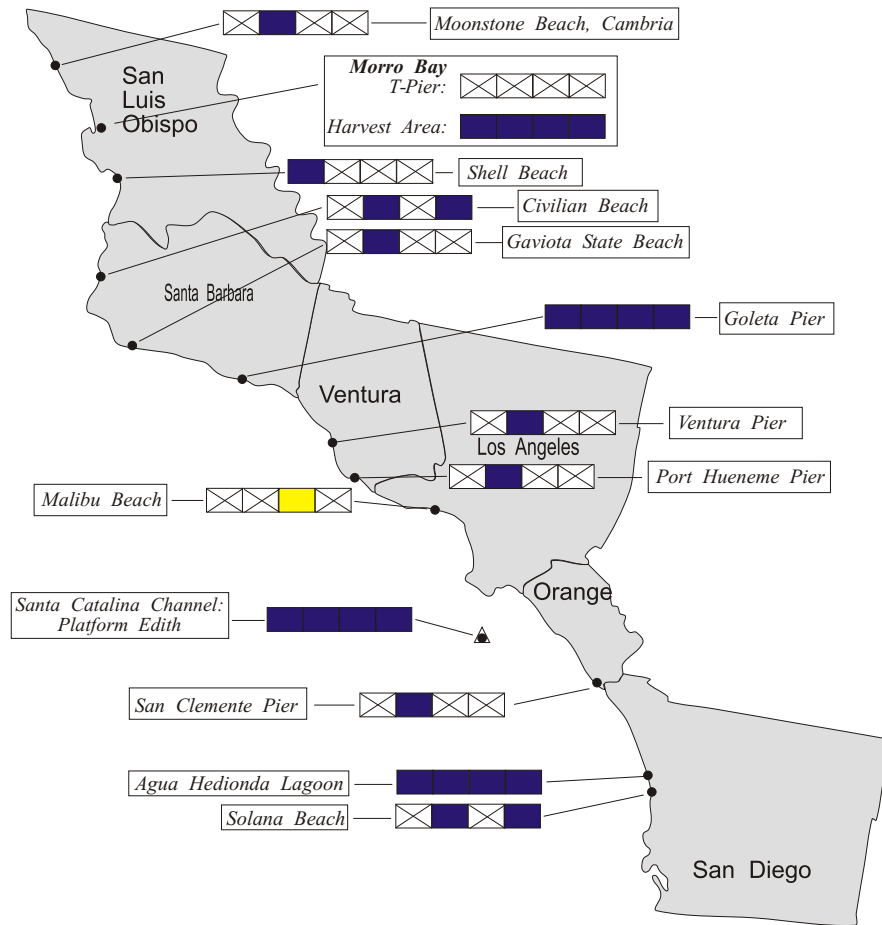
For Recorded Biotoxin Information Call:
(800) 553 - 4133

SHELLFISH BIOTOXIN MONTHLY REPORT

May 2000

Technical Report No. 00-14

Distribution of Shellfish Biotoxins Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

PSP Range: (ug/100 g) no sample not detected < 80¹ ≥ 80

DA Range: (ppm) no sample not detected < 20² ≥ 20

¹PSP Alert Level ²DA Alert Level
● = Single Site ● = Multiple Sites ▲ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, May 2000.

INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

Southern California Summary:

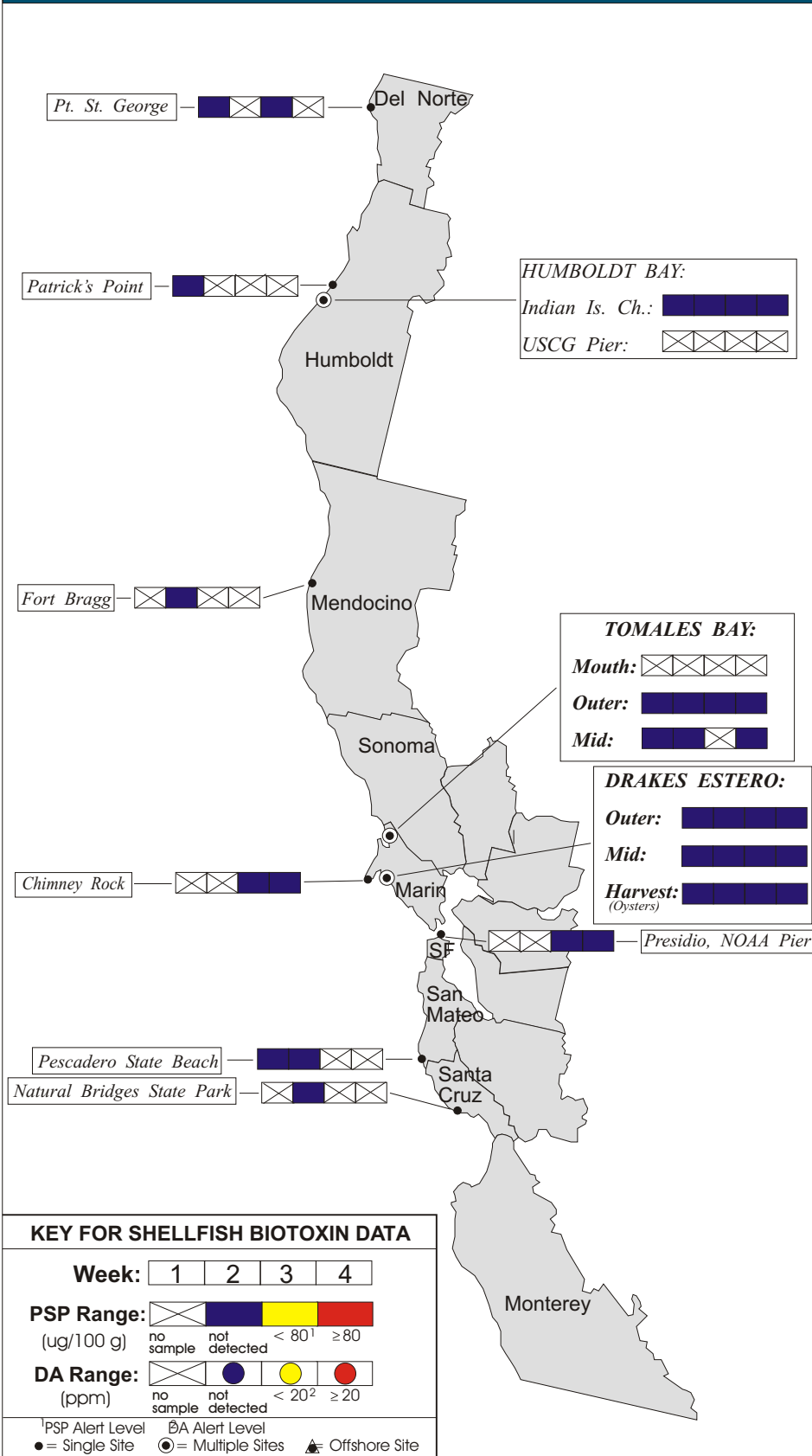
Paralytic Shellfish Poisoning (PSP): PSP toxicity was detected at one southern California site during May. A low level of PSP toxins was detected in mussels collected from Malibu Beach Pier (Los Angeles County) on May 17 (43 ug). Low levels of PSP toxins were also detected in April from two sites in Los Angeles County.

*For Information on our Volunteer
Field Sampling Program Please Call:*

(510) 540-3423

Distribution of Shellfish Biotoxins

Northern California



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

PSP toxicity was not detected at any northern California sites during May.

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

For More Information Please Call:
(510) 540 - 3423

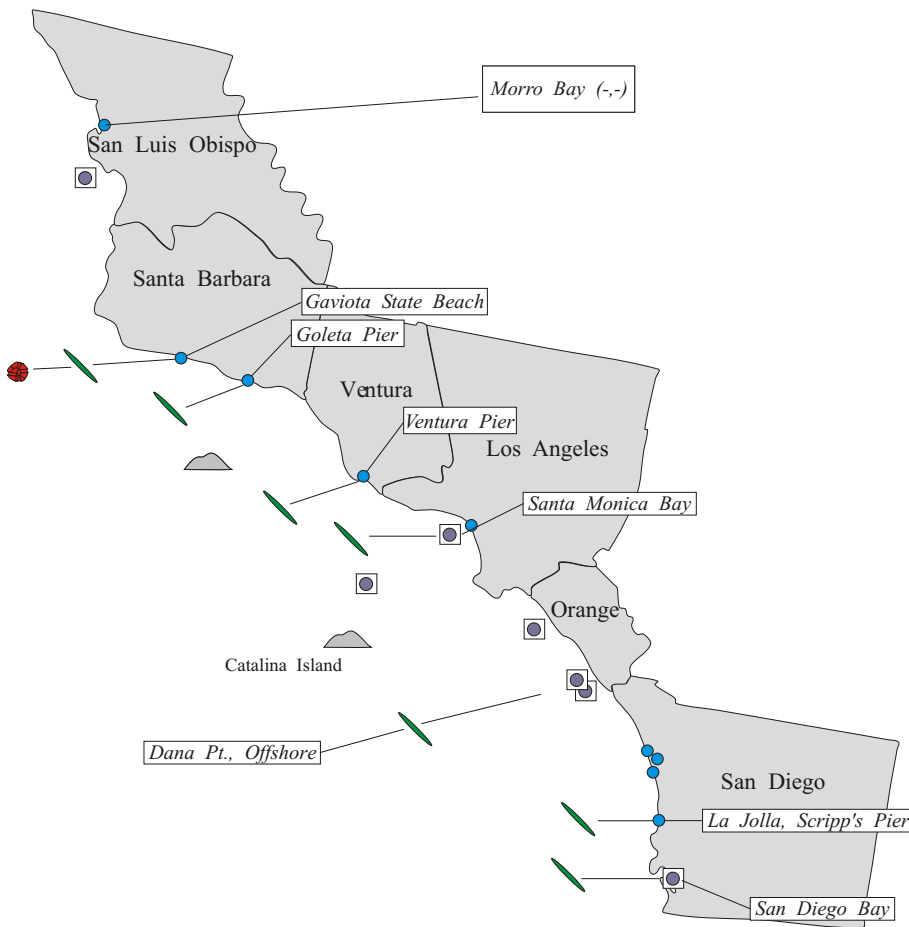
For Recorded Biotoxin Information Call:
(800) 553 - 4133

Phytoplankton Monthly Report

May 2000

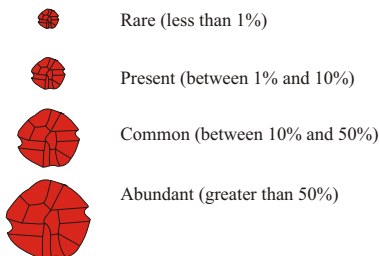
Technical Report No. 00-15

Distribution of Toxin-Producing Phytoplankton Southern California



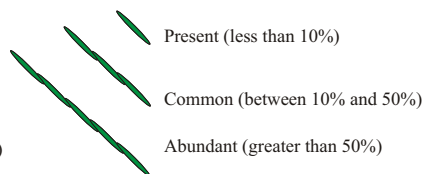
Relative Abundance of Known Toxin Producers

Alexandrium Species



For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Pseudo-nitzschia Species



MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- ⊙ Multiple Sampling Stations
- ⊠ Offshore Sampling Station

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at several southern California sites during May. Low numbers of *Alexandrium* were observed in a sample collected from Gaviota Pier (Santa Barbara County) on May 3.

***Pseudo-nitzschia* species** (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed along most of the southern California coast during May. Relative abundances and cell densities were very low, however.

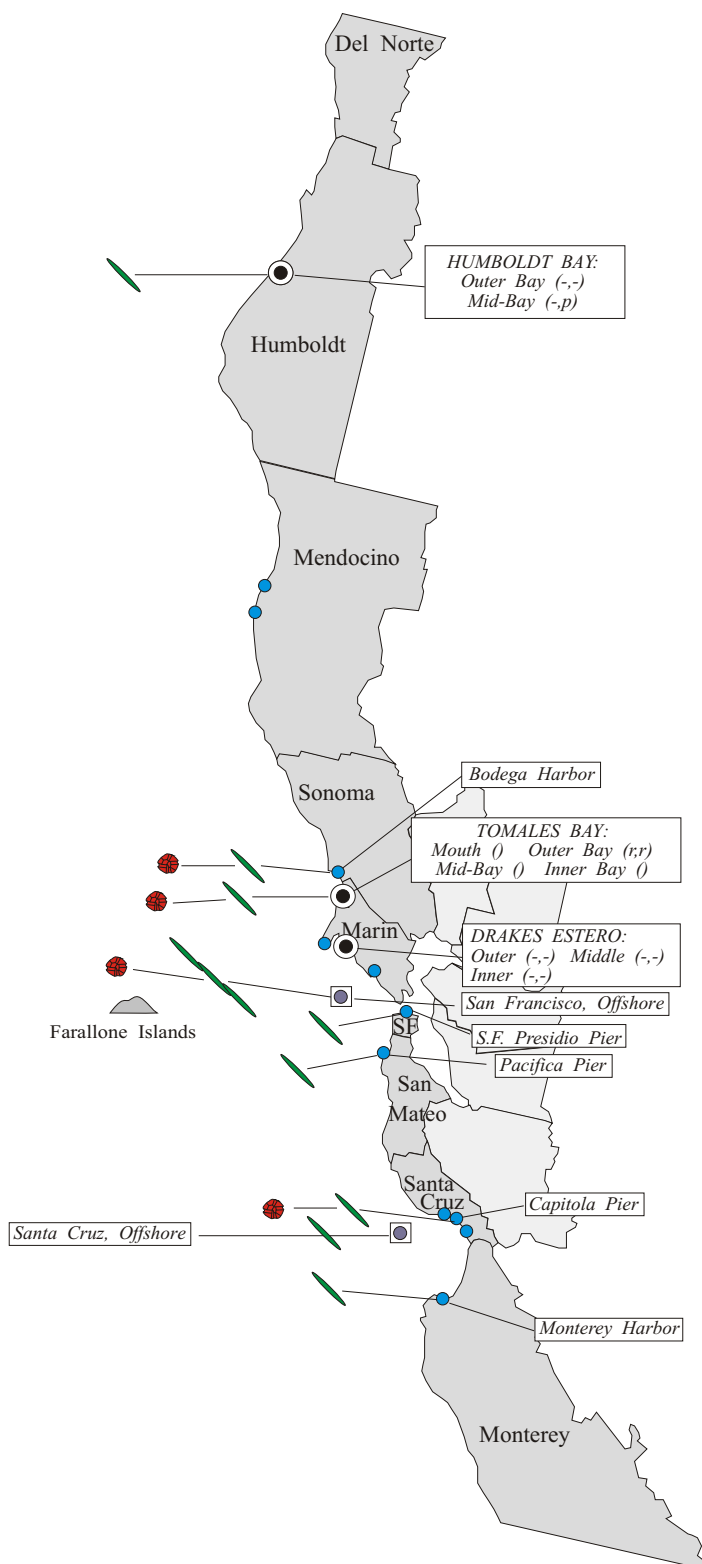
Other species. In contrast to northern California, in which diatoms were the dominant species, dinoflagellates were predominant for most of May along the southern California coast. *Prorocentrum* and *Ceratium* were common along most of the coast while *Gymnodinium splendens* was abundant in samples from the Ventura Pier. *Gonyaulax polyedra* was common around Scripps Pier (San Diego County).

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For More Information Please Call:
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For Recorded Biotxin Information Call:
(800) 553 - 4133

Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at low levels in samples from several sites in Northern California during May. Small numbers of this toxin producer were detected from Santa Cruz (Capitola Pier, May 3) northward to Bodega Harbor (May 28). In addition to our observations at the various nearshore stations we also observed *Alexandrium* in a volunteer's sample from offshore of San Francisco.

***Pseudo-nitzschia* species** (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed at several sites in Northern California during May. Low relative abundances of this diatom were detected in samples from Monterey County northward to Humboldt Bay. The highest relative abundances were detected offshore of San Francisco (May 23).

Other species. Diatoms were predominant for most of May, with *Chaetoceros* spp. the most abundant. Although cell densities were low for most samples, a sample from Monterey Harbor contained high densities of the diatoms *Chaetoceros* and *Asterionella*. An exception to the dominance of diatoms along the coast was seen in a sample from Tomales Bay, in which the dinoflagellates *Gonyaulax* and *Prorocentrum* were common (May 18).

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

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(510) 540 - 3423*

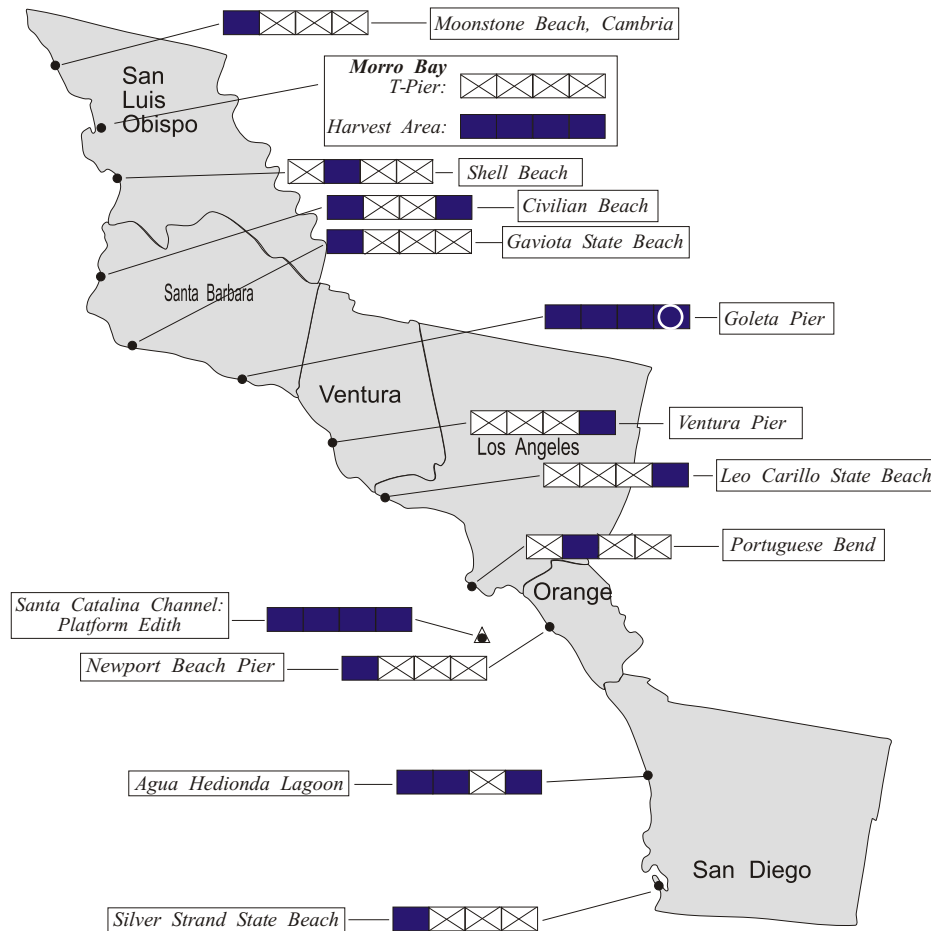
*For Recorded Biotxin Information Call:
(800) 553 - 4133*

SHELLFISH BIOTOXIN MONTHLY REPORT

June 2000

Technical Report No. 00-16

Distribution of Shellfish Biotoxins Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

PSP Range: (ug/100 g) no sample not detected < 80¹ ≥ 80

DA Range: (ppm) no sample not detected < 20² ≥ 20

¹PSP Alert Level ²DA Alert Level
● = Single Site ● = Multiple Sites ▲ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, June 2000.

INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

Southern California Summary:

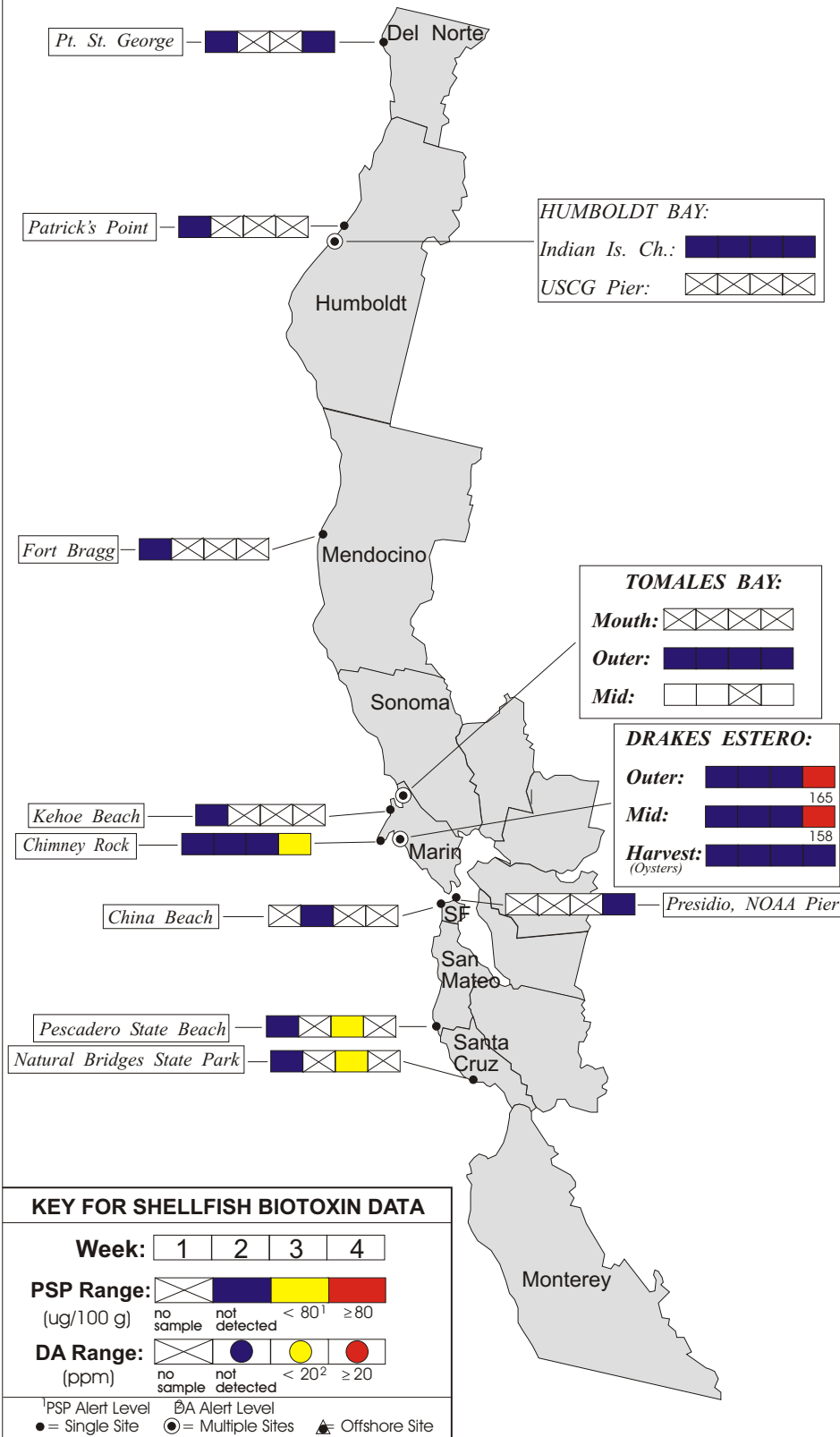
Paralytic Shellfish Poisoning (PSP): PSP toxicity was not detected at any southern California site during June.

Domoic Acid (DA): Mussels from a site in Santa Barbara were analyzed for domoic acid and were found to be negative for this toxin.

*For Information on our Volunteer
Field Sampling Program Please Call:*

(510) 540-3423

Distribution of Shellfish Biotoxins Northern California



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

PSP toxicity was detected at several northern California sites during June. Low levels of PSP toxins were detected in mussels collected from Marin, San Mateo, and Santa Cruz counties. Toxin levels above the alert level of 80 ug/100 g tissue were detected in Marin County.

The first detectable level of PSP toxicity occurred at our sentinel site in Drakes Bay on June 23 (44 ug). By June 27 we detected toxin levels in the mouth of Drakes Estero that were above the federal alert level. Within two days (June 29) the toxin concentration had increased above the alert level at Bed #12 in the middle of the Estero.

Low concentrations of PSP toxins were also detected on June 21 at Pescadero State Beach (San Mateo County) and Natural Bridges State Park (Santa Cruz County).

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

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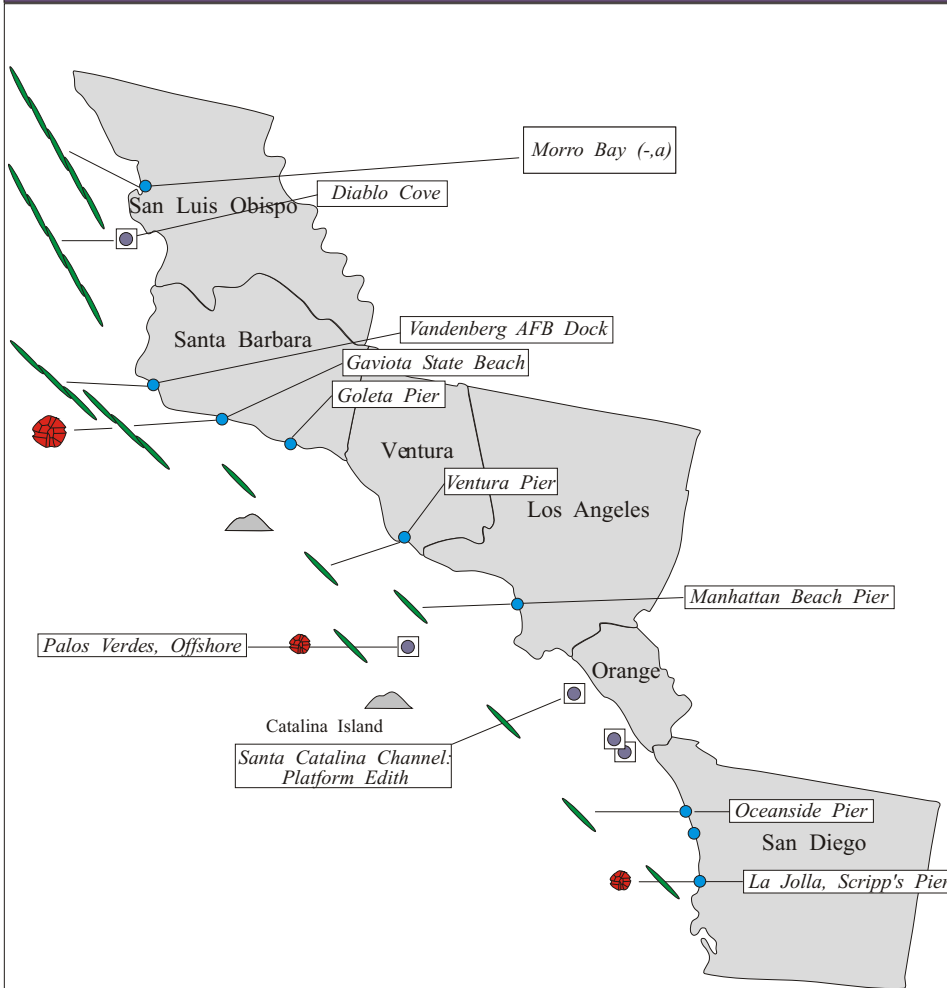
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Phytoplankton Monthly Report

June 2000

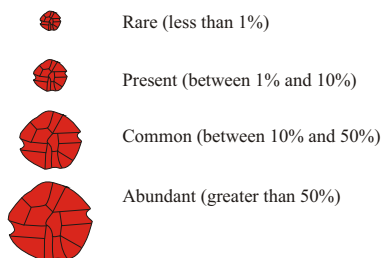
Technical Report No. 00-17

Distribution of Toxin-Producing Phytoplankton Southern California



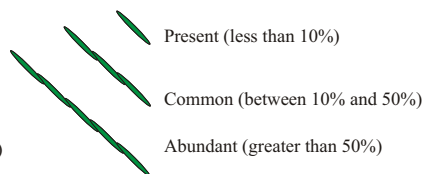
Relative Abundance of Known Toxin Producers

Alexandrium Species



For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Pseudo-nitzschia Species



MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at several southern California sites during June. Low numbers of *Alexandrium* were observed in samples collected from Gaviota Pier (Santa Barbara County, June 7), offshore of the Palos Verdes peninsula (Los Angeles County, June 6), and at Scripps Pier (San Diego County, June 12). Overall cell densities were very low during June.

***Pseudo-nitzschia* species** (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed along most of the southern California coast during June. Increased numbers were observed along the San Luis Obispo and Santa Barbara coast.

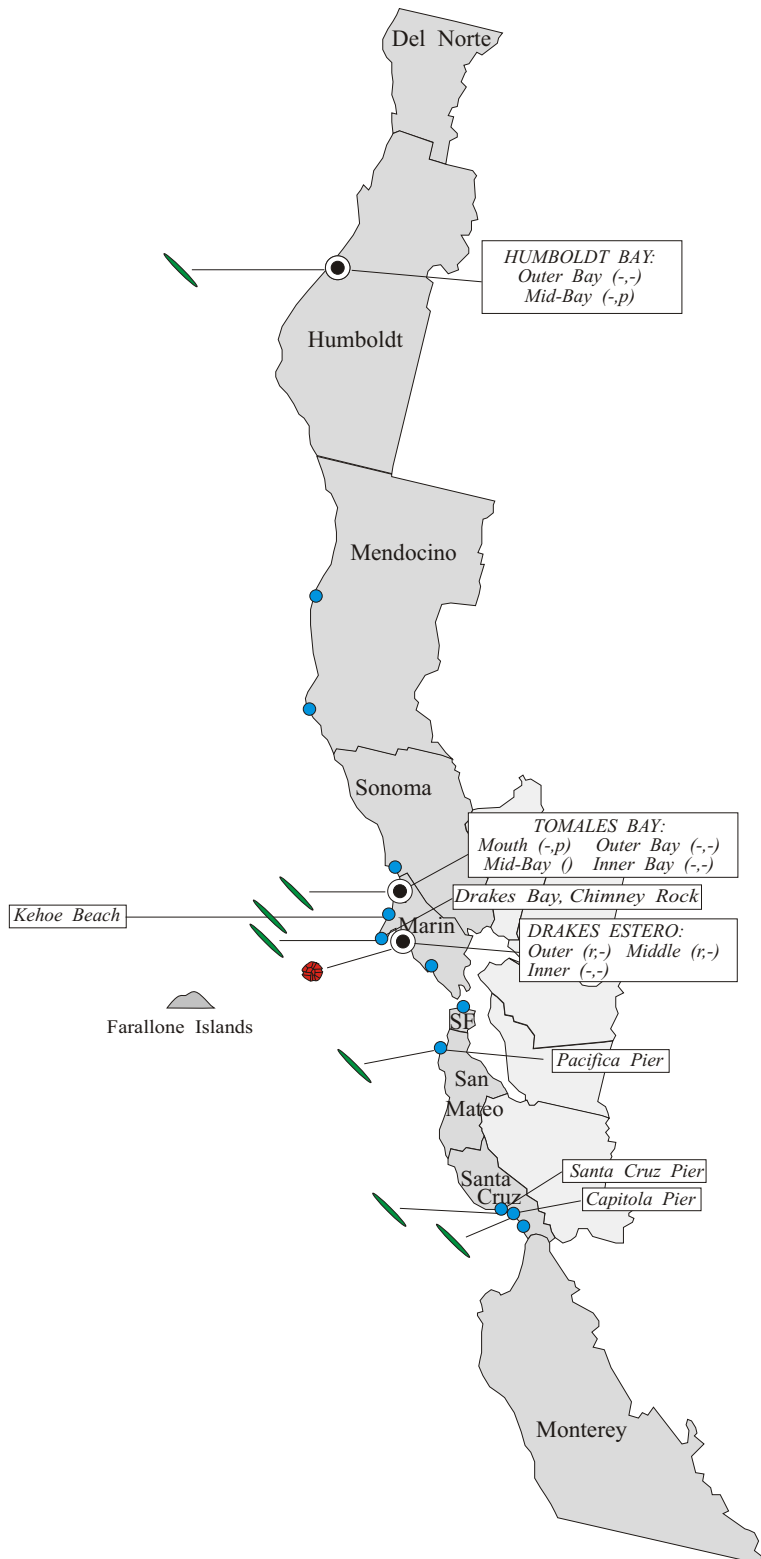
Other species. In contrast to the San Luis Obispo coast, where diatoms were the dominant species, dinoflagellates were predominant for most of June along the southern California coast. *Prorocentrum micans*, *Ceratium* spp., *Protoperidinium* spp., *Gonyaulax polyedra*, and *Gymnodinium splendens* were all commonly observed. As in May, overall cell densities were quite low during June.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

For More Information Please Call:
(510) 540 - 3423

For Recorded Biotxin Information Call:
(800) 553 - 4133

Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). *Alexandrium* was observed at low levels in samples from one location in Northern California during June. Small numbers of this toxin producer were detected from Drakes Estero.

***Pseudo-nitzschia* species** (includes all known potential domoic acid producing diatoms). *Pseudo-nitzschia* was observed at several sites in Northern California during June. The distribution of this diatom was reduced compared to our observations in May.

Other species. Diatoms continued to be predominant through June, with a diversity of species being common in our volunteers' samples. *Chaetoceros* spp., *Skeletonema*, and *Coscinodiscus* were common along most of the northern California coast although cell densities were low for most samples.

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